I CLAIM:

1. A transmission efficient packet based display interface arranged to couple a multimedia source device to a multimedia sink device, comprising:

a bi-directional auxiliary channel arranged to transfer information between the multimedia source device and the multimedia sink device and vice versa, wherein the information transferred over the auxiliary channel includes a set of packet attributes; and

a unidirectional main link arranged to carry a number multimedia data packets from the multimedia source device to the multimedia sink device each having a multimedia data packet header, wherein each of the headers is substantially reduced in size over what would otherwise be necessary since the packet attributes are communicated via the auxiliary channel prior to the transmission of the main link packets over main link thereby minimizing the packet overhead and providing a very high main link efficiency.

2. A transmission efficient packet based display interface as recited in claim 1, further comprising:

a transmitter unit coupled to the source device arranged to receive a source packet data stream in accordance with a native stream rate;

a receiver unit coupled to the sink device; and wherein the main link has an associated link transmission rate that is independent of the native stream rate.

3. A transmission efficient packet based display interface as recited in claim 1, wherein associated ones of the multimedia data packets form a particular multimedia data packet stream.

4. A transmission efficient packet based display interface as recited in claim 3, wherein the multimedia data packet stream is one of a number of multimedia data packet streams each having an associated adjustable data stream link rate that is independent of the native stream rate.

5. A transmission efficient packet based display interface as recited in claim 1, wherein the bi-directional auxiliary channel is formed of a uni-directional back channel configured to carry information from the sink device to the source device and a uni-directional forward channel included as part of the main channel for carrying information from the source device to the sink device in concert with the back channel.

6. A transmission efficient packet based display interface as recited in claim 5, wherein the main link further comprises:

a number of virtual links each being associated with a particular one of the multi media data packet streams wherein each of said virtual links has an associated virtual link bandwidth and a virtual link rate.

7. A transmission efficient packet based display interface as recited in claim 6, wherein a main link bandwidth is at least equal to an aggregate of the virtual link bandwidths.

8. A transmission efficient packet based display interface as recited in claim 1, further comprising:

a hot plug event detector unit arranged to automatically determine when an active sink device is connected to the linking unit.

9. A transmission efficient packet based display interface as recited in claim 1, wherein the information includes display timing information used by the sink device to provide a displayed image based upon the received data stream.

10 A transmission efficient packet based display interface as recited in claim 1, wherein the information includes sync loss information, dropped packets information and the results of training sessions information.

11. A transmission efficient packet based display interface as recited in claim 1, wherein the multimedia data packet transfer is an isochronous type transfer that includes a video/graphics data stream and a multichannel audio stream and wherein the information transfer is an asynchronous transfer.

12. A transmission efficient packet based display interface as recited in claim 1, wherein the main link rate is adjustable in a range of approximately 1.0 Gigabits per second (Gbps) to approximately 2.5 Gbps.

13. A display interface as recited in claim 1, wherein the receiver unit includes a time-base recovery unit arranged to regenerate a particular data stream's

native rate based upon a time stamp embedded within the main link data packets and wherein the time stamp is based upon a determination of a number of native stream clocks in 2^{20} cycles of link cycle clock frequency period.

14. A transmission efficient packet based display interface as recited in claim 13, wherein when the multimedia data stream is an audio stream, then there is no associated time stamp.

15. A transmission efficient packet based display interface as recited in claim 14, wherein the source device informs the display device by way of the auxiliary channel of an audio sample rate and a number of bits per sample corresponding to the audio stream.

16. A transmission efficient packet based display interface as recited in claim 15, wherein a native audio stream rate is calculated based upon the audio sample rate, the number of bits per sample and the corresponding link rate.

17. A display interface as recited in claim 1, wherein some of the multimedia data packets include a number of sub-packets each having an associated sub-packet header..

18. A display interface as recited in claim 17 further comprising:

a selective refresh unit included in the sink device that updates only a portion of a displayed graphics image for every video frame based upon a number of image

coordinates corresponding to the updated portion of the displayed image by way of sub-packets included in a corresponding video data stream.

19. A method for efficiently transmitting packet data between a multimedia source device and a multimedia sink device, comprising:

transferring information between the multimedia source device and the multimedia sink device and vice versa by way of a bi-directional auxiliary channel, wherein the information transferred over the auxiliary channel includes a set of packet attributes; and

carrying a number multimedia data packets from the transmitter unit to the receiver unit each having a multimedia size reduced data packet header by a unidirectional main link, wherein each of the headers is substantially reduced in size over what would otherwise be necessary since the packet attributes are communicated via the auxiliary channel prior to the transmission of the main link packets over main link thereby minimizing the packet overhead and providing a very high main link efficiency.

20. A method as recited in claim 19, further comprising:

coupling a transmitter unit coupled to the source device arranged to receive a source packet data stream in accordance with a native stream rate;

coupling a receiver unit coupled to the sink device; and wherein the main link has an associated link transmission rate that is independent of the native stream rate.

21. A method as recited in claim 19, wherein associated ones of the multimedia data packets form a particular multimedia data packet stream.

22. A method as recited in claim 21, wherein the multimedia data packet stream is one of a number of multimedia data packet streams each having an associated adjustable data stream link rate that is independent of the native stream rate.

23. A method as recited in claim 19, wherein the bi-directional auxiliary channel is formed of a uni-directional back channel configured to carry information from the sink device to the source device and a uni-directional forward channel included as part of the main channel for carrying information from the source device to the sink device in concert with the back channel.

24. Computer program product for efficiently transmitting packet data between a multimedia source device and a multimedia sink device, comprising:

computer code for transferring information between the multimedia source device and the multimedia sink device and vice versa by way of a bi-directional auxiliary channel, wherein the information transferred over the auxiliary channel includes a set of packet attributes;

computer code for carrying a number multimedia data packets from the transmitter unit to the receiver unit each having a multimedia size reduced data packet header by a unidirectional main link, wherein each of the headers is substantially reduced in size over what would otherwise be necessary since the packet attributes are communicated via the auxiliary channel prior to the transmission of the main link packets over main link thereby minimizing the packet overhead and providing a very high main link efficiency; and

computer readable medium for storing the code.

25. Computer program product in claim 24, further comprising:

computer code for coupling a transmitter unit coupled to the source device arranged to receive a source packet data stream in accordance with a native stream rate;

computer code for coupling a receiver unit coupled to the sink device; and

wherein the main link has an associated link transmission rate that is independent of the native stream rate.

26. Computer program product as recited in claim 24, wherein associated ones of the multimedia data packets form a particular multimedia data packet stream.

27. Computer program product as recited in claim 26, wherein the multimedia data packet stream is one of a number of multimedia data packet streams each having an associated adjustable data stream link rate that is independent of the native stream rate.

28. Computer program product as recited in claim 24, wherein the bi-directional auxiliary channel is formed of a uni-directional back channel configured to carry information from the sink device to the source device and a uni-directional forward channel included as part of the main channel for carrying information from the source device to the sink device in concert with the back channel.